UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,067	12/13/2000	Paul W. Jones	81596PCW	7724

7590 03/19/2004

Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER	
KIM, CHONG R	
ART UNIT	PAPER NUMBER
2623	8

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/736,067	Applicant(s) JONES ET AL.	
	Examiner Charles Kim	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on January 2, 2004 has been entered and made of record.

2. In view of applicant's amendment, the 112 first paragraph rejections are withdrawn.

3. In view of applicant's amendment, the 101 rejection is withdrawn.

4. Applicant's arguments with respect to claims 41-51 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "humanly visible watermarked image" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

The following quotation of 37 CFR § 1.75 (d)(1) is the basis of objection:

(d)(1) The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a)).

6. Claims 44, 46-47 are objected to under 37 CFR § 1.75 (d)(1) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Referring to claim 44, the phrase "the step of determining the standard deviation of the watermark signal" in lines 1-2 lacks antecedent basis. It appears that the applicant intended the phrase to read "the step of determining the standard deviation". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 50-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claim 50, the phrase "the image" in line 2 renders the claim indefinite because it is unclear which image (non-watermarked or watermarked) is being claimed. For examination purposes the phrase will be interpreted as "the watermarked image". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 41, 42, 44, 46, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Braudaway et al., U.S. Patent No. 5,530,759 ("Braudaway") and Wen et al., U.S. Patent No. 6,130,741 ("Wen"). [Note that Wen incorporates by reference Daly et al., U.S. Patent No. 5,859,920 ("Daly")].

Referring to claim 41, Braudaway discloses a method for embedding a watermark in an image, wherein the watermark is visible to the human eyes when the image containing the watermark is displayed, comprising the steps of:

a. producing a watermark signal that includes grain noise characteristics (col. 5, lines 23-26 and 48-56)

b. combining the watermark signal with the image to produce a watermarked image that contains a humanly visible watermark (col. 4, lines 30-37 and figure 2).

Braudaway explains that the watermark signal includes grain noise characteristics, as noted above, but fails to explicitly disclose that the watermark signal includes a **film** grain noise characteristic. However, this feature was exceedingly well known in the art. For example, Wen discloses a watermark signal that includes a determined film grain characteristic (col. 4, lines 37-52, col. 5, lines 23-25, and figure 3).

Braudaway and Wen are both concerned with digital image watermarking techniques. Braudaway is concerned with a watermarking process that maintains the quality of the image (Braudaway, col. 1, lines 65-67). Wen provides a reliable watermarking method that allows the quality of the image to be preserved even though it contains embedded information (Wen, col. 2, lines 14-25). Therefore, it would have been obvious to modify the watermark signal of Braudaway so that it includes the film grain noise characteristics of Wen, in order to preserve the quality of the image, thereby enhancing the watermarking process.

Referring to claim 42, Wen further discloses a step of determining the film grain noise characteristic that comprises defining a standard deviation (col. 4, lines 53-54 and figure 4).

Referring to claim 44 as best understood, Wen further discloses that the step of determining the standard deviation comprises matching the film grain noise characteristic to the standard deviation (col. 4, lines 53-54 and figure 4).

Referring to claim 46, Wen further discloses that the step of determining the standard deviation comprises determining an image signal level (figure 4).

Referring to claim 48, Daly discloses the step of producing the watermark signal that comprises modifying at least one carrier image to obtain the film grain noise characteristic (col. 7, line 62-col. 8, line 12).

9. Claims 43, 45, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Braudaway et al., U.S. Patent No. 5,530,759 ("Braudaway"), Wen et al., U.S. Patent No. 6,130,741 ("Wen"), and Gray et al., U.S. Patent No. 5,641,596 ("Gray").

Referring to claim 43, Braudaway and Wen fail to explicitly disclose that the step of

determining the film grain noise characteristic comprises defining Fourier magnitude data. However, this feature was exceedingly well known in the art. For example, Gray discloses the step of determining film grain noise characteristics that comprises defining Fourier magnitude data (col. 2, lines 22-40. Note that characterizing the spatial correlation coefficients of film grain is equivalent to characterizing the Fourier amplitude spectrum; see page 13, lines 10-12 of the applicant's specification).

Braudaway, Wen, and Gray are all concerned with processing a digital image based on grain noise characteristics. Gray's method eliminates the effects of adverse grain noise, while creating a synthetic grain in the digital image to simulate the look of a particular film type (Gray, col. 2, lines 3-9). Therefore, it would have been obvious to include the teachings of Gray in the method of Braudaway and Wen, in order to enhance the digital image.

Referring to claim 45, Braudaway, Wen, and Gray fail to explicitly disclose that the Fourier spectrum of the watermark signal is shaped to resemble a Fourier spectrum of the film grain noise characteristic. However, Wen explains that the watermark signal is defined based on the film grain noise characteristics (Wen, col. 5, lines 23-25). Therefore, it would have been obvious to shape the Fourier spectrum of the watermark signal of Braudaway, Wen, and Gray to resemble a Fourier spectrum of the film grain noise characteristic, in order to allow the quality of the image to be preserved even though it contains embedded information (Wen, col. 2, lines 14-25).

Referring to claim 47, Braudaway and Wen fail to explicitly disclose that the step of determining the standard deviation comprises determining an image color channel. However, this feature was exceedingly well known in the art. For example, Gray discloses the step of

determining a standard deviation of an image that comprises determining an image color channel (col. 2, lines 31-53).

Braudaway, Wen, and Gray are all concerned with processing a **color** digital image based on grain noise characteristics. Gray's method eliminates the effects of adverse grain noise, while creating a synthetic grain in the digital image to simulate the look of a particular film type (Gray, col. 2, lines 3-9). Therefore, it would have been obvious to include the teachings of Gray in the method of Braudaway and Wen, in order to enhance the digital image.

10. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Braudaway et al., U.S. Patent No. 5,530,759 ("Braudaway") and Wen et al., U.S. Patent No. 6,130,741 ("Wen"), further in view of Acharya et al., U.S. Patent No. 6,449,380 ("Acharya"). [Note that Wen incorporates by reference Daly et al., U.S. Patent No. 5,859,920 ("Daly")].

Referring to claim 49, Braudaway and Wen fail to explicitly disclose the step of removing an existing noise characteristic prior to combining the watermark signal having the film grain noise characteristic. However, this feature was exceedingly well known in the art. For example, Acharya discloses a watermarking method wherein a digital image is processed (compressed) to remove an existing noise characteristic prior to embedding the watermark signal (col. 4, lines 1-47. Note that compressing the digital image will remove the existing noise characteristic).

Braudaway, Wen, and Acharya are all concerned with embedding a watermark in a digital image. Acharya's method provides added level of security, and allows secure image data representation and secure movement of signal information (Acharya, col. 6, lines 23-32).

Therefore, it would have been obvious to process the digital image of Braudaway and Wen, in order to remove the existing noise characteristic prior to embedding the watermark signal, as taught by Acharya, in order to enhance the security of the watermarking process.

11. Claims 50, 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Braudaway et al., U.S. Patent No. 5,530,759 ("Braudaway") and Wen et al., U.S. Patent No. 6,130,741 ("Wen"), further in view of the article entitled "Embedding Visible Video Watermarks in the Compressed Domain" by Meng et al. ("Meng").

Referring to claim 50 as best understood, Braudaway and Wen fail to explicitly disclose the step of providing the watermarked image as a single frame in a movie sequence. However, this feature was exceedingly well known in the art. For example, Meng discloses a watermarked image that is provided as a single frame in a movie sequence (page 474).

Braudaway, Wen, and Meng are all concerned with digital image watermarking techniques. Meng provides an efficient and robust watermarking method that generates adaptive watermarks on images with consistent visibility (Meng, page 477). Therefore, it would have been obvious to include the teaching of Meng in the method of Braudaway and Wen, in order to enhance the watermarking process.

Referring to claim 51, Braudaway further discloses the step of providing ownership and tracing information useful in combating piracy in the watermark (col. 1, lines 56-60).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 703-306-4038. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
March 10, 2004

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600